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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,646	10/04/2006	Sergei Sawitzki	USO40177	2180
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EXAMINER				
ALPHONSE, FRITZ				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/599,646

Applicant(s)

SAWITZKI, SERGEI

Examiner

FRITZ ALPHONSE

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 04 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date 10/04/2006
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Inventor's Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in regard to the application filed on 10/04/2006. Claims 1-20 have been presented for examination.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The Information Disclosure Statement (IDS) submitted on 10/04/2006 has been considered by the examiner.

Specification

4. The abstract of the disclosure does not commence on a separate sheet in accordance with 37 CFR 1.52(b)(4). A new abstract of the disclosure is required and must be presented on a separate sheet, apart from any other text.

Claim Objections

5. Claim 12 is objected to because of the following informalities: Claim 12, line 3 recites the limitation "output symbol of a pair of said pairs". It is suggested to replace the phrase "output symbol of a pair of said pairs" with "output symbol of a pair of said parallel Viterbi decoders pairs". Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 3, 8, 9 and 17-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 3, the claim recites the limitations “wherein a **decoder of the plurality** is configured so that **such an** updated path...”. It is unclear as to what is meant by these limitations in the claim.

As to claim 8, the claim recites “allocates the blocks to **respective ones** of the decoders...**content-wise**...”. It is unclear as to what is meant by these phrases in the claim.

As to claims 9 and 19-20, the claims recite “allocates the blocks to **respective ones** of the decoders...”. It is unclear as to what is meant by this phrase in the claims.

As to claim 17, the phrase “**further comprising the steps of:**” recited in line 3 renders the claim indefinite because it is not clear which method are the steps limited.

Claim 18 depends from claim 17 and inherently includes limitations therein and therefore is rejected as well.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-16, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (U.S. Pat. No. 7,065,696) in view of Bienz (U.S. Pat. No. 5,414,738).

As to claim 1, Liu (figs. 3-4) shows a Viterbi decoding apparatus including at least one device for allocating among plural, parallel Viterbi decoders pairs (302a, 302b) of output symbols of a convolutional encoder (310a, 310b; col. 5, lines 4-17) and for merging output (col. 4, lines 36-48) of the plural decoders to form a decoded bitstream (TCM Decoded Group; col. 4, lines 26-35). According to Liu the plural decoders, each configured with a trellis stage formed from two constituent trellis stages (col. 2, line 27-31, where Liu teaches the system provides an implementation of multi-screen decoder in the form of a trellis coded modulation TCM).

Liu does not explicitly teach that any path metric being updated at said stage is updated no more than once at said stage.

However, in the same field of endeavor, Bienz discloses a method and apparatus for decoding signals produced by a communication system wherein path metric being is updated only once (col. 10, lines 10-14).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention to improve upon the maximum likelihood paths comparison decoder, as disclosed by Bienz. Doing so would increase the robustness of transmission of information through a noisy channel.

As to claim 2, Liu discloses one of the symbols of a pair has been generated in a clock cycle of said encoder that consecutively follows a clock cycle in which the other was generated (col. 2, lines 49-54).

As to claim 3, the dependent claim 3 included in the statement of rejection but not specifically addressed in the body of the rejection has inherited the deficiencies of the parent claim 1 and has not resolved the deficiencies. Therefore, it is rejected based on the same

rationale as applied to the parent claim above.

As to claim 4, Liu does not explicitly disclose the constituent trellis stages are consecutive and identical. However, the limitation is obvious and well Known in the art (see Applicant's Prior Art figures 3 and 4).

As to claims 5-6, Liu discloses the constituent trellis stage defines the convolutional encoder (310a, 310b; col. 5, lines 4-17), and the apparatus is configured with a total of two decoders (302a, 302b; fig. 3; col. 4, lines 25-35).

As to claim 7, Liu discloses the encoder inputs a single bit for each of said output symbols (col. 5, lines 5-12).

As to claims 8-9, the dependent claims 8-9 included in the statement of rejection but not specifically addressed in the body of the rejection have inherited the deficiencies of the parent claim 1 and have not resolved the deficiencies. Therefore, they are rejected based on the same rationale as applied to the parent claim above.

As to claim 10, Liu (figs. 3-4) shows a Viterbi decoding method including the steps of allocating among plural, parallel Viterbi decoders pairs (302a, 302b) of output symbols of a convolutional encoder (310a, 310b; col. 5, lines 4-17); operating the plural decoders with a trellis stage formed from two constituent trellis stages (col. 2, line 27-31, where Liu teaches the system provides an implementation of multi-screen decoder in the form of a trellis coded modulation TCM). According to Liu, output of the plural decoders is merging to form a decoded bitstream (col. 5, lines 9-17, where Liu teaches the QAM demapper output 314).

Liu does not explicitly teach that any path metric being updated at said stage is updated no more than once at said stage.

However, in the same field of endeavor, Bienz discloses a method and apparatus for decoding signals produced by a communication system wherein path metric being is updated only once (col. 10, lines 10-14).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention to improve upon the maximum likelihood paths comparison decoder, as disclosed by Bienz. Doing so would increase the robustness of transmission of information through a noisy channel.

As to claim 11, Liu discloses one of the symbols of a pair has been generated in a clock cycle of said encoder that consecutively follows a clock cycle in which the other was generated (col. 2, lines 49-54).

As to claim 12, the dependent claim 12 included in the statement of rejection but not specifically addressed in the body of the rejection has inherited the deficiencies of the parent claim 10 and has not resolved the deficiencies. Therefore, it is rejected based on the same rationale as applied to the parent claim above.

As to claim 13, Liu does not explicitly disclose the constituent trellis stages are consecutive and identical. However, the limitation is obvious and well Known in the art (see Applicant's Prior Art figures 3 and 4).

As to claims 14-15, Liu discloses a constituent trellis stage that defines the convolutional encoder (310a, 310b; col. 5, lines 4-17), and a plurality of decoders consist in total of two decoders (302a, 302b; fig. 3; col. 4, lines 25-35).

As to claim 16, Liu discloses a method, wherein the encoder inputs a single bit for each of the output symbols (col. 5, lines 5-12).

As to claims 19-20, the dependent claims 19-20 included in the statement of rejection but not specifically addressed in the body of the rejection have inherited the deficiencies of the parent claim 10 and have not resolved the deficiencies. Therefore, they are rejected based on the same rationale as applied to the parent claim above.

10. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (U.S. Pat. No. 7,065,696) in view of Bienz (U.S. Pat. No. 5,414,738), and further in view of Allen (U.S. Pat. No. 5,583,500).

As to claim 17, the claim differs from claim 10 by the additional limitations “a component of the system is capable of operating at a higher bandwidth than a decoder of the plural decoders, further comprising the steps of: providing said system; and operating said system using said Viterbi decoding method, said higher bandwidth being accommodated by concurrent performance of the plural decoders”.

Liu and Bienz do not explicitly disclose all the limitations in claim 17, particularly “a component of the system is capable of operating at a higher bandwidth than a decoder of the plural decoders, further comprising the steps of: providing said system; and operating said system using said Viterbi decoding method, said higher bandwidth being accommodated by concurrent performance of the plural decoder”. However, the limitations are obvious and well known in the art, as evidenced by Allen (fig. 24; col. 35, lines 34-44, where Allen teaches component of a parallel decoder system accommodates high bandwidths and increases the effective bandwidth).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention to incorporate into Liu's (figure 3) the component of decoding system (figure

24), as disclosed by Allen. Doing so would provide simple and fast decoding, and decode data in parallel and in pipelined manner.

As to claim 18, Liu does not explicitly disclose the component is disposed upstream of the plural Viterbi decoders. However, the limitation is obvious and well known in the art, as evidenced by Allen (fig. 24; col. 35, lines 34-44). See the motivation above.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz Alphonse, whose telephone number is (571) 272-3813. The examiner can normally be reached on M-F, 8:30-6:00, Alt. Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman, can be reached at (571) 272-3644.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-3824

Information regarding the status of an application may also be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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/Fritz Alphonse/

Examiner, Art Unit 2112

April 13, 2009